

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF WEST VIRGINIA  
Martinsburg Division**

**SHENANDOAH RIVERKEEPER and  
POTOMAC RIVERKEEPER, INC.,**

*Plaintiffs,*

**and**

**STATE OF WEST VIRGINIA, by and through  
the West Virginia Department of Environmental  
Protection, and  
SCOTT MANDIROLA, Director, Division of  
Water and Waste Management,**

*Intervening Plaintiffs,*

**v.**

**CIVIL ACTION NO: 3:11-CV-17  
JUDGE BAILEY**

**OX PAPERBOARD, LLC,**

*Defendant.*

**CONSENT DECREE**

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## **I. BACKGROUND**

Plaintiffs, Shenandoah Riverkeeper and Potomac Riverkeeper, Inc., (“the Citizens Group”) have filed a Complaint in this action against Defendant Ox Paperboard, LLC (“Defendant” or “Ox Paperboard”) and the State of West Virginia, by and through the West Virginia Department of Environmental Protection (“WVDEP”) and by Scott Mandirola, Director, Division of Water and Waste Management, WVDEP, has filed a Complaint in Intervention against Defendant, which collectively allege that Defendant violated Sections 301 and 402 of the Clean Water Act (“CWA”), 33 U.S.C. §§ 1311 and 1342, and the West Virginia Water Pollution Control Act (“WPCA”), W.Va. Code §§ 22-11-6 and 22-11-8. Specifically, the Complaint and Complaint in Intervention allege that Defendant discharged and continues to discharge pollutants into state waters and waters of the United States in violation of Section 301 of the CWA, 33 U.S.C. § 1311 and Section 8 of the WPCA, W.Va. Code § 22-11-8, and of the conditions and limitations of WV/NPDES Permit #WV0005517 issued to Defendant by the State of West Virginia pursuant to Section 402 of the CWA, 33 U.S.C. § 1342 and Section 8 of the WPCA, W.Va. Code § 22-11-8. Defendant does not admit any liability arising out of the transactions or occurrences alleged in the Complaint and the Complaint in Intervention nor does Defendant admit any fact or legal conclusion alleged in the Complaint and the Complaint in Intervention.

The parties recognize and the Court by entering this Consent Decree finds that this Consent Decree has been negotiated by the parties in good faith and will avoid further litigation among the parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, with the consent of the parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

## II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action under Section 309(b) of the CWA, 33 U.S.C. § 13.19(b), and under 28 U.S.C. §§ 1331, 1345, and 1355. This Court has supplemental jurisdiction over WVDEP's state law claims pursuant to 28 U.S.C. § 1367(a).

2. Venue is proper in the Northern District of West Virginia pursuant to 28 U.S.C. §§ 1319(b) and (c) and 1395(a), as well as Section 309(b) of the CWA, 33 U.S.C. § 13.19(b), because it is in the judicial district in which Defendant is located, resides, and/or is doing business, and/or in which the majority of the violations alleged in the Citizen Groups' Complaint and WVDEP's Complaint in Intervention occurred.

3. For purposes of this Consent Decree, or in any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree and consents to venue in this judicial district.

4. For purposes of this Decree, Defendant agrees that the Complaint and the Complaint in Intervention state claims upon which relief may be granted pursuant to Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, and the WPCA, W.Va. Code § 22-11-1 *et seq.*

### III. APPLICABILITY

5. The provisions of this Consent Decree apply to and are binding upon the State of West Virginia, the Citizens Group, the Defendant, and the Defendant's successors and/or assigns.

6. The provisions of this Consent Decree shall also apply to the Defendant's Facility located at Halbtown, in Jefferson County, West Virginia.

7. No transfer of ownership or operation of the Facility, whether in compliance with the Consent Decree or otherwise, shall relieve Defendant of its obligation to ensure that the terms of the Decree are implemented, unless: (a) the Citizens Group and the WVDEP consent to relieve Defendant of its obligations, and (b) the transferee agrees to undertake the obligations required by this Consent Decree, as they apply to the Facility being transferred, and to be added as a party under the Decree and thus be bound by the terms hereof. At least thirty (30) days prior to such transfer, the Defendant shall provide a copy of this Consent Decree to the proposed transferee and simultaneously provide written notice of the prospective transfer, together with a copy of the provisions of the proposed written agreement pertaining to the successor entity's assumption of responsibilities under this Consent Decree to the Citizens Group and the WVDEP in accordance with this Consent Decree (notices). Any attempt to transfer ownership or operation of the facility without complying with this paragraph constitutes a violation of this decree.

8. In any action to enforce this Decree, Defendant shall not raise as a defense a failure by any of its officers, directors, employees, agents or contractors to take any actions necessary to comply with the provisions of this Decree.

#### IV. DEFINITIONS

9. Terms used in this Consent Decree are identified in the CWA, the WPCA, or in regulations promulgated pursuant to both Acts, shall have the meanings assigned to them in the Acts or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

- a. "Applicable law" shall mean
  - i. The Clean Water Act ("CWA") and
  - ii. The West Virginia Water Pollution Control Act ("WPCA").
- b. "BOD" shall mean Biological Oxygen Demand.
- c. "Complaint" shall mean the Complaint filed by the Citizens Group in this action.
- d. "Complaint in Intervention" shall mean the Complaint in Intervention filed by the WVDEP in this action.
- e. "Consent Decree" or "Decree" shall mean this Decree and any and all appendices attached hereto.
- f. "Defendant" shall mean Ox Paperboard, LLC.
- g. "Effective Date" shall be the date this Consent Decree is entered by the Court, as recorded on the Court's docket.
- h. "Facility" shall mean Defendant's Halltown Mill Facility located in Jefferson County, West Virginia.
- i. "NPDES" or "WV/NPDES" shall mean the National Pollutant Discharge Elimination System defined in 40 C.F.R. § 122.2 in any state-issued NPDES permit.
- j. "Outlet" shall mean an NPDES permitted discharge point.
- k. "SBR" shall mean Solid Batch Reactor.
- l. "TSS" shall mean Total Suspended Solids.

## V. CIVIL PENALTY

10. Within ninety [90] days of the Effective Date of the Consent Decree, Defendant shall pay a total of \$104,850.00 as a civil penalty to the WVDEP by certified or cashier's check to the WVDEP for deposit in the WVDEP's Water Quality Management Fund. Payment shall be mailed to:

Michael Zeto  
Chief Inspector Environmental Enforcement  
WV Department of Environmental Protection  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304

WVDEP has calculated the civil penalty pursuant to WVDEP's administrative penalty adjustment factors under 47 C.S.R. § 1-6.2 and taking into account WVDEP's participation in the case as an Intervenor, the Citizens Group's institution of this Civil Action, Defendant's good faith efforts to comply with the terms and conditions of the NPDES permit, and Defendant's cooperation with WVDEP. In addition, Defendant agrees to pay the sum of \$50,000.00 to fund a Supplemental Environmental Project ("SEP") within the Shenandoah River watershed in which it discharges. Within six (6) months of the Effective Date of this Consent Decree, Defendant, the WVDEP, and the Citizens Group will reach agreement upon an SEP that will seek to improve water quality in the watershed of Flowing Springs Run, and Defendant will commence funding the mutually-agreed upon SEP. Should projects not be evident or possible within the Flowing Springs Run within six (6) months of the effective date of the Consent Decree, then projects that make water quality improvements or improvements to the use of the Shenandoah River in the area between Millville Dam and the Confluence with the Shenandoah River will be considered eligible. It will be the goal of the parties that the SEP will be completed within one (1) year of the effective date of this Consent Decree.

## **VI. COMPLIANCE PROGRAM**

11. This Consent Decree in no way affects or relieves Defendant of its responsibility to comply with applicable Federal, state, and local laws, regulations, and permits.

12. Defendant shall perform the work required by this Consent Decree in compliance with the requirements of all applicable Federal, state, and local laws, regulations, and permits. This Consent Decree shall not be considered as a permit issued pursuant to any Federal, state, or local statute or regulation.

13. Within ten (10) months from the Effective Date of this Consent Decree, Defendant or its consultants and engineers shall design, construct, complete, and place into operation a moving bed biofilm reactor ("MBBR") biological treatment system within a retro fitted and upgraded clarifying tank for treatment of pre-effluent wastewater flow to the SBR within the Facility's paper production assembly line. The MBBR shall provide treatment of pre-effluent wastewater to degrade soluble BOD and produce effluent quality at the 003 discharge outlet into Flowing Springs Run within the limitations and conditions for BOD, TSS, and ammonia nitrogen established by WV/NPDES Permit #WV0005517. The technical requirements, specifications, and costs of this project are more specifically described in the Scope of Work attached as Appendix A. The estimated cost of the MBBR is \$428,500.00.

14. Within ten (10) months from the Effective Date of this Consent Decree, Defendant shall design, construct, complete, and place into operation a duplex lined filter system and a chlorine dioxide generator at the Facility's influent point for pre-treatment of fresh water from Flowing Springs Run to kill fecal and other bacteria to potable quality. The technical requirements, specifications, and costs of this project are more specifically described in the



Scope of Work attached as Appendix B. The estimated cost of the installed system is \$136,000.00.

15. The Facility will address the issues of BOD, BOD<sub>5</sub>, TSS, ammonia nitrogen, pH, TRC, and DO at the outlets, which are include in the Complaints in this Civil Action, with the installation of the MBBR system, duplex lined filter system, and chlorine dioxide generator, described in Paragraphs 13 and 14 of this Consent decree. Defendant has addressed the issues with visible solids by cleaning the process tanks and implementing a proper housekeeping schedule to maintain the tanks. Defendant has also addressed the issues related to the monitoring, reporting, operation, and maintenance of the Facility by consulting with Acacia Environmental Group LLC, Garratt Callahan, and Bio Process H<sub>2</sub>O and establishing internal audits and an internal maintenance plan with Facility staff.

## **VII. STIPULATED PENALTIES**

16. Defendant shall be liable for stipulated penalties in the amounts set forth in this section to the WVDEP for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section IX. Force Majeure. "Compliance" by Defendant shall include the completion of the activities required under Section VI. Compliance Program within the specified time periods and deadlines established by and approved under this Consent Decree.

17. For each failure to comply with the Compliance Program schedule deadlines specified in Section VI, Defendant shall pay the following stipulated penalties per violation per day:

<u>Period of Noncompliance with Requirement</u>	<u>Penalty Per Day</u>
First day to 30 <sup>th</sup> day	\$2,500.00
31 <sup>st</sup> day to 60 <sup>th</sup> day	\$5,000.00
Each day beyond 60 days	\$10,000.00

For interim violations of Defendant's WV/NPDES Permit #WV0005517, that is, between the date of this Consent Decree and completion of the Compliance Program schedule, the following categories of stipulated penalties shall apply:

Violations up to 15% over permit limit:	\$1,000.00
Violations 16-30% over permit limit:	\$1,500.00
Violations 31-50% over permit limit:	\$2,500.00
Violations >50% over permit limit:	\$5,000.00

#### **VIII. FORCE MAJEURE**

18. The word "Force Majeure" for the purposes of this Consent Decree is defined as an event arising from causes beyond the control of Defendant or in the control of any entity controlled by Defendant, including its consultants and contractors, which delays or prevents the performance of any obligation under this Consent Decree. Nothing in this section is intended to relieve Defendant of its duty to use all due diligence to complete the requirements of this Consent Decree in a timely manner or of Defendant's obligation to meet all discharge limitations and other obligations contained in Defendant's WV/NPDES permit. Unanticipated or increased costs or changed financial circumstances are not force majeure events. Failure to apply for a required permit or approval, or to provide in a timely manner all information required to obtain a permit or approval necessary to meet the requirements of this Consent Decree, are not again force majeure events. However, if a permitting authority fails to issue, renew or modify –

or delays in issuing, renewing, or modifying a lawful permit, order or other action required for any part of the work under this Consent Decree, Defendant is entitled to seek relief under the force majeure provisions of this Consent Decree. Stipulated penalties shall not be due for the number of days of nonperformance caused by a force majeure event as defined in this Paragraph, provided that Defendant complies with the terms of this Section.

19. If any event occurs that causes or may cause delay in the completion of any requirement of this Consent Decree, whether or not due to a force majeure event, Defendant shall so notify WVDEP and the Citizens Group, in writing, within fourteen (14) days after Defendant knows, or, in the exercise of due diligence, should have known of the event. The notice shall describe in detail the bases for Defendant's contention that it experienced a force majeure event, the precise cause or causes of the event, the measures taken or to be taken to prevent or minimize the noncompliance or event, and the timetable by which those measures will be implemented. Failure to so notify WVDEP and the Citizens Group shall constitute a waiver of any claim of force majeure as to the event in question.

20. If WVDEP or the Citizens Group finds that a delay in performance is, or was, caused by a force majeure event, it shall extend the time for performance, in writing, for a period to compensate for the delay resulting from such event, and stipulated penalty shall not be due for such period. In proceedings on any dispute regarding a delay in performance, the provisions of Section X, Dispute Resolution, shall apply, and Defendant shall have the burden of proving that the delay is, or was, caused by a force majeure event, and that the amount of additional time requested is necessary to compensate for that event.

21. Compliance with a requirement of this Consent Decree shall not by itself constitute compliance with any other requirement. An extension of one compliance date based on a particular event shall not automatically extend another compliance date or dates. Defendant shall make an individual showing of proof regarding the cause of each delayed incremental step or other requirement for which an extension is sought. Defendant may petition for the extension of more than one (1) compliance date in a single request.

### **IX. DISPUTE RESOLUTION**

22. Any dispute that arises between Defendant and the WVDEP and the Citizens Group with respect to the meaning or application of any of the requirements of this Consent Decree shall be, in the first instance the subject of informal negotiations between those parties to attempt to resolve such disputes. Such period of informal negotiations shall not extend beyond thirty (30) days from the date when notice of a dispute is given by one party to the others, unless all parties to the dispute have agreed in writing to extend that period. After informal negotiations, if the parties to the dispute are unable to agree upon the meaning or application of the requirements of this Consent Decree, then Defendant shall comply with the position taken by the WVDEP and the Citizens Group, subject only to Defendant's right to petition the Court as set forth below. This dispute resolution process shall not apply to the issuance, renewal, modification, denial or revocation of a permit and the issuance of orders or other actions of the WVDEP.

23. Within thirty (30) days of the end of the information negotiation period for the resolution of the dispute set forth in the preceding paragraph above, Defendant may petition the Court for relief. Such petition shall set forth the nature of the dispute and the proposal for its resolution. The WVDEP and the Citizens Group shall have thirty (30) days to respond to the

petition and propose an alternate resolution. In any such dispute, the Court will conduct a *de novo* review in which Defendant shall bear the burden of demonstrating that its actions or positions taken are in accordance with, and will assure Defendant's compliance with the terms, conditions, requirements, and objectives of this Consent Decree, the Clean Water Act, the Water Pollution Control Act, and Defendant's current WV/NPDES permit. Any party may request an evidentiary hearing for good cause.

#### **X. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS**

24. This Consent Decree resolves the civil claims of the Citizens Group and the WVDEP for the violations alleged in the Complaint and the Complaint in Intervention filed in this action.

25. The WVDEP and the Citizens Group reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree. This Consent Decree shall not be construed to limit the rights of the WVDEP or the Citizens Group to obtain penalties or injunctive relief under the CWA or the WPCA or implementing regulations (including, but not limited to, penalties or injunctive relief for violations of any permit limit, including discharges from WV/NPDES Permit WV0005517, Outlet 003, or under other Federal or State laws, regulations or permit conditions), except as expressly specified in the previous paragraph.

26. In any subsequent administrative or judicial proceeding initiated by the WVDEP or the Citizens Group for injunctive relief, civil penalties or other appropriate relief relating to the Defendant's violations, Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting or other defenses based upon any contention that the

claims raised by the WVDEP or the Citizens Group in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved herein.

27. This Consent Decree is not a permit, or a modification of any permit, under any Federal, state or local laws or regulations. Defendant is responsible for achieving and maintaining complete compliance with all applicable federal, state and local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations or permits, except as set forth herein. The WVDEP and the Citizens Group do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree shall result in compliance with provisions of the CWA or the WPCA or with any other provisions of federal, state or local laws, regulations or permits. Application for construction grants, state revolving loan funds or any other grants or loans, or other delays caused by inadequate Facility planning or plans and specifications on the part of Defendant shall not be cause for extension of any required compliance date in this Consent Decree.

28. This Consent Decree does not limit or affect the rights of Defendant or of the WVDEP or the Citizens Group against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

29. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

30. By execution of this Consent Decree, Defendant releases and shall hold harmless the WVDEP and the Citizens Group, their instrumentalities, agents, employees, in their official and personal capacities, of any and all liability or claims arising out of or otherwise related to the negotiations leading to this Consent Decree and all matters contained therein.

#### **XI. COSTS OF SUIT**

31. Defendant shall pay to the Citizens Group reasonable attorney fees and costs in the amount of \$ 25,000.00. Payment of this amount shall be made no later than 30 days after the effective date of this Consent Decree. The parties shall otherwise bear their costs of this action, except that the WVDEP shall be entitled to collect the costs (including attorney fees) incurred in any action necessary to collect any portion of the civil penalty due or stipulated penalties due but not paid by Defendant.

#### **XII. NOTICES**

32. Unless otherwise specified herein, whenever notifications, submissions, reports or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

To the State of West Virginia:

Chief Inspector, Environmental Enforcement  
WV Department of Environmental Protection  
601 57<sup>th</sup> Street, S.E.  
Charleston, West Virginia 25304

To the Citizens Group:

Jeff Kelble  
Shenandoah Riverkeeper  
P.O.Box 405  
Boyce, Virginia 22620

Ed Merrifield  
Potomac Riverkeeper, Inc.  
1100 15th Street, N.W., 11th Floor  
Washington, DC 20005

To Defendant:

Ox Paperboard, LLC  
Attn: Kevin Hayward, President  
Post Office Box 70  
Halltown, West Virginia 25423

33. Any party may, by written notice to the other parties, change its designated notice recipient or notice address provided above.

34. Notices submitted pursuant to this section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the parties in writing.

### **XIII. RETENTION OF JURISDICTION**

35. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering Orders modifying or effectuating this Decree or enforcing compliance with the terms of this Decree. During the pendency of this Consent Decree, any party may apply to the Court for any relief necessary to construe and effectuate this Consent Decree.

### **XIV. MODIFICATION**

36. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by all the parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court. Deadline extensions of less than sixty (60) days shall not be considered a material change to the Decree requiring Court approval.

Any disputes concerning modification of this Decree shall be resolved pursuant to Section X, provided, however, that instead of the burden of proof being upon the Defendant, the



party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification with Federal Rules of Civil Procedure 60(b).

#### **XV. TERMINATION**

37. After Defendant has completed the requirements of this Decree and has paid the civil penalty and attorney fees as required by this Consent Decree, Defendant may serve upon counsel for the WVDEP and the Citizens Group a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

38. Following receipt by the WVDEP and the Citizens Group of Defendant's Request for Termination, the parties shall confer informally concerning the Request and any disagreement that the parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the WVDEP and Citizens Group agree that the Decree may be terminated, the parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

39. If the WVDEP and the Citizens Group do not agree that the Decree may be terminated, Defendant may invoke the dispute resolution process under Section X of this Consent Decree.

#### **XVI. SIGNATORIES/SERVICE**

40. The undersigned representatives of the Defendant, the WVDEP, and the Citizens Group, certify that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the parties to this document.

41. The Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Defendant agrees to accept Service of Process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

#### **XVII. INTEGRATION**

42. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the parties with respect to the settlement embodied in the Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than deliverables that are subsequently submitted and approved pursuant to this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree.

#### **XVIII. FINAL JUDGMENT**

43. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a Final Judgment of the Court as to the WVDEP, the Citizens Group, and Defendant. If the Court finds that there is no just reason for delay and therefore enters this Judgment as a Final Judgment under Fed. R. Civ. P. 54 and 58.

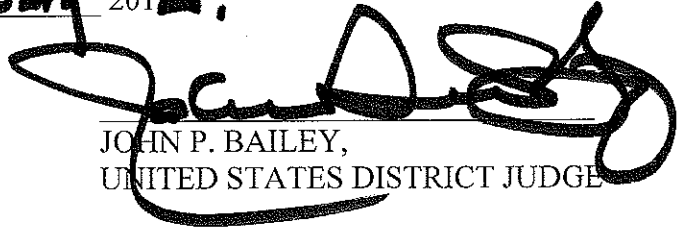
#### **XIX. APPENDICES**

44. The following appendices are attached to and are made part of this Consent Decree:

Appendix A: Installation of a Moving Bed Biofilm  
Reactor ("MBBR") Biological Treatment  
System

Appendix B: Installation of a Duplax Lined Filter System  
and Chlorine Dioxide Generator

ENTERED this 13<sup>th</sup> day of February 2012.



JOHN P. BAILEY,  
UNITED STATES DISTRICT JUDGE

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of  
*Shenandoah Riverkeeper and Potomac Riverkeeper, Inc. v. Ox Paperboard, LLC.*

FOR SHENANDOAH RIVERKEEPER AND  
POTOMAC RIVERKEEPER, INC.

Date: December 23, 2011

/s/ Christopher P. Stroeck  
Christopher P. Stroeck, Esq. (WVSB#9387)  
*Counsel for Plaintiff*

FOR THE WEST VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION AND  
SCOTT MANDIROLA, DIRECTOR, DIVISION  
OF WATER AND WASTE MANAGEMENT,  
WVDEP

Date: December 23, 2011

/s/ Sarah J. Surber  
Sarah J. Surber, Esq. (WVSB#10460)  
*Counsel for WVDEP*

FOR OX PAPERBOARD, LLC

Date: December 23, 2011

/s/ Charles F. Printz, Jr.  
Charles F. Printz, Jr., Esq. (WVSB#2985)  
*Counsel for Ox Paperboard, LLC*

## APPENDIX A

### INSTALLATION OF A MOVING BED BIOFILM REACTOR ("MBBR") BIOLOGICAL TREATMENT SYSTEM

#### bioprocessH<sub>2</sub>O

#### **BIOPROCESSH<sub>2</sub>O WASTEWATER TREATMENT PROCESS**

The proposed treatment process is a single pass bioFAST™ MBBR which employs bioprocessH<sub>2</sub>O's mobile biofilm carriers that provide a high density of attached growth biomass and excellent mass transfer conditions. Air is applied to the bioFAST™ MBBR tank using a positive displacement blower and coarse bubble aeration grid assembly. The neutrally buoyant biofilm carriers within the aeration tanks provide a stable base for the growth of a diverse community of microorganisms. The biofilm carriers have a very high surface-to-volume ratio, allowing for a high concentration of microorganisms to thrive within the internally protected areas of the media. BioFAST™ MBBR is a self-sustaining biological process, eliminating the need to periodically waste sludge to maintain a food-to-microorganism (F/M) ratio. The biomass continuously sloughs from the media and is discharged from the bioreactors along with the treated wastewater. Biological solids are removed using a clarifier, DAF and/or microfilter.

#### **BioFAST™ MBBR PROCESS ADVANTAGES:**

The bioFAST™ MBBR process is resilient to load fluctuations, assimilating toxic loads and is capable of higher organic loading rates than other biological treatment systems. The single pass bioFAST™ MBBR treatment process is easy to operate and maintain since the only process parameters that need monitoring include: 1) the bioreactor dissolved oxygen (DO); 2) the wastewater nutrient concentrations (carbon:nitrogen:phosphorus) are supplied at an Eckenfelder rule of thumb ratio (100:5:1) and; 3) the addition of a defoamer to control possible foaming events. The bioFAST™ MBBR process does not require monitoring of food to mass (F:M) ratios and adjustment of wasting rates because of the fixed film nature of the process and the fact that the dead bacteria is continuously sloughed from the biofilm carriers. Furthermore, the MBBR process is not prone to filamentous bacteria, sludge bulking problems, oxygen deficiency or mechanical problems that can occur with other biological treatment systems. The benefits of the bioFAST™ MBBR include:

- **Ease of Operation:** The single pass process is easy to operate and maintain since the only process parameters that require monitoring include the DO, pH, defoamer and the nutrient concentrations.
- **Small Footprint:** The bioFAST™ MBBR will typically require less space than an activated sludge process treating equivalent loads.
- **Ideal for High Loads:** Large aperture areas within the carrier result in an ability to handle high organic loads without biomass clogging.
- **Responds to Load Fluctuations without Operator Intervention:** The self-regulating nature of the biofilm adjusts to variations in organic load. As the contaminant load increases, the microbial population in the biofilm increases enabling additional treatment capacity. Likewise, during low loading conditions, the biological population decreases.
- **Resilient to Toxic Shocks:** Fixed film processes are resistant to toxic contaminants as the inner layer of biofilm microorganisms are protected.

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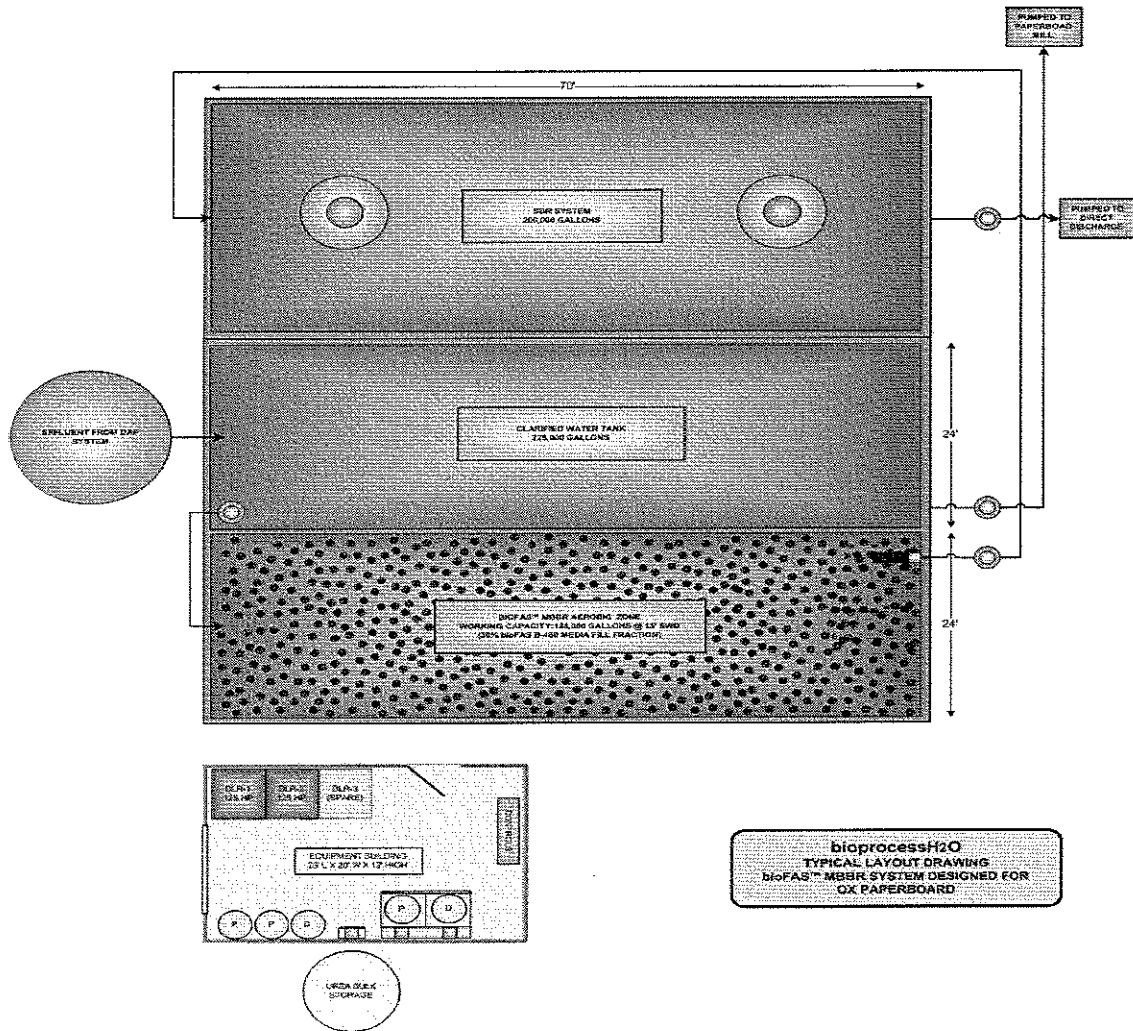
## bioprocessH<sub>2</sub>O

**SYSTEM PROCESS DESCRIPTION** - The proposed system shall consist of the following process components:

1. **Transfer Pump Module:** The wastewater will be transferred from the clarified water tank to the MBBR Bioreactor by a VFD driven submersible transfer pump rated or flow rates of up to 300 GPM. The flow rate and the totalized flow will be monitored by a magnetic flow meter. The magnetic flow meter will then send a 4 – 20 mA signal to the control panel for nutrient dosing for the MBBR process. The nutrient dosing rate will be planned to supply excess chemicals for the provision of sufficient concentration of nutrients for the SBR process.
2. **bioFAS™ MBBR Module:** The bioFAS™ MBBR tank shall have a working volume capacity of ~188,000 gallons at a side water depth (SWD) of 15'. The bioFAS™ MBBR biological treatment process is designed to meet the target effluent limits listed in Table 1. The aeration requirements for the biological treatment process will be supplied by positive displacement blower(s). A DO sensor will control the speed of the blower for load responsive process optimization and conservation of energy.
3. **Chemical Addition Module:** BioprocessH<sub>2</sub>O shall supply one – skid mounted chemical feed system for providing defoamer and nutrients to the bioFAS™ MBBR biological treatment process. A 6,500-gallon Bulk Storage tank for Urea will also be supplied for the capability to provide for bulk chemical deliveries of 5,000 gallons per tanker truck load. A foam sensor will be provided for installation inside each MBBR reactor to signal for defoamer addition when required.
4. **Process Control Equipment:** BioprocessH<sub>2</sub>O shall supply a control panel rated for an electrical supply of 480VAC/3Ø/60Hz to control and monitor the Bioprocess supplied equipment listed in this proposal. The control panel will be equipped panel view touch screen to provide the operator interface terminal for the process controls. The Control panel will also house two (2) 125 HP VFD Drives for the Blowers and one (1) 3 HP VFD drive for the wastewater transfer pump.

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### SYSTEM COMPONENTS

#### Transfer Pump Module

BioprocessH2O will supply a VFD driven submersible pump rated for 300 GPM to transfer of wastewater from the clarified water tank to the MBBR tank.

- > One (1) Submersible Pump rated for 300 GPM equipped with a VFD driven 3 HP motor for control of the transfer flow rate. Pump to be equipped with a guide rail kit. (Note: 2" diameter SS Pipe rails are to be provided by others.)
- > One (1) 3" magnetic flow meter to monitor the flow rate and to totalize the volume transferred wastewater directed to the MBBR. The magnetic flow meter will also provide a 4 – 20 mA signal to the bioprocess PLC controller for nutrient dosing.

#### BioFAS™ MBBR Module

Parameter	Quantity
Average Flow	40,000 GPD
Minimum Working Volume of the Bioreactor	~188,000 gallons
# of Reactors	1
Fill Fraction	30%
Total Media Required	215 m <sup>3</sup>
Approximate Total HRT	~113 hours

#### BioFAS™ MBBR Aeration Tank

The existing horizontal rectangular concrete tank located on the outboard side shall provide a working volume of ~188,000 gallons having dimensions of 70' long x 24' wide x 18' deep with a 15' SWD (side water depth). The Aeration Tank is to be furnished with the following design features and equipment (by others):

- > 12" Flanged nozzle connection for effluent discharge
- > Flat bottom
- > Retention screen that is 24" high mounted along the overflow weir (as per bioprocessH2O specifications)

#### BIOFAS™ MBBR Bioreactor Instrument Module

- > One (1) Foam Sensor
- > One (1) DO Sensor
- > One (1) Float-type Level sensor

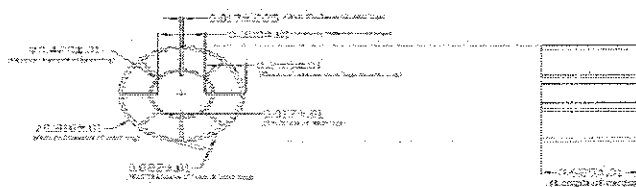
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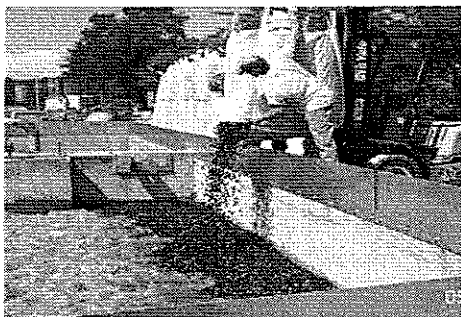
### BIOFAS™ B-460 Biofilm Carriers

BioprocessH2O will supply 215 m<sup>3</sup> of bioFAS™ B-460 Biofilm Carriers for the MBBR. The carriers shall be delivered in 1 m<sup>3</sup> super sacks.



BioFAS™ B-460 Biofilm Carrier	SI Units	US Units
Nominal Diameter	20.5 mm	0.81 inches
Nominal Length	16 mm	0.625 inches
Specific Gravity	0.96 - 0.97	
Internal Protected Surface Area	402 m <sup>2</sup> /m <sup>3</sup>	136 ft <sup>2</sup> /ft <sup>3</sup>
Active Surface Area	460 m <sup>2</sup> /m <sup>3</sup>	156 ft <sup>2</sup> /ft <sup>3</sup>
Materials of Construction	High Density Polyethylene (HDPE)	

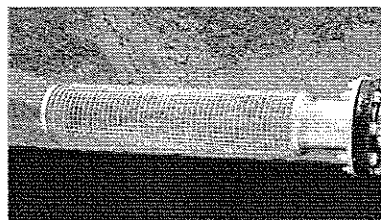
### BioFAS™ Media being installed at a customer site



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### Media Retention Screens

One (1) flange mounted wedge wire media retention screen will be provided for the bioFAS™ MBBR. Since the Existing tank is equipped with a suction fitting for the SBR transfer pumps, this fitting would be furnished with a riser pipe and supports for the horizontally mounted retention screen to be located at an elevation of 10 - 12' above the basin floor.



The retention screen has a very high open area that provides excellent flow through capacity. The wedge wire screen shall have slot openings of approximately 10 mm (0.39") that continuously widen inwardly so that particles will pass through the screen and the media will be retained.

- Effluent Retention Screen: (1) 18" diameter x 48" long mounted on a 12" flange. A retention screen support bracket assembly shall be provided if required. The surface of the vertically mounted screen shall be constantly scoured by the bioFAS™ biofilm carriers. The screen is to be bolted to a customer supplied 12" diameter flanged riser pipe (10' elevation from the basin floor) and supported by a 304SS pipe supports pipe and wall supports (supplied by others).

### Carrier Retention Screen Specifications

Parameters	Values
Screen Design Flow	~300 GPM (suction for SBR feed pump)
Max. Screen Design Hydraulic Loading	450 GPM
Screen Nozzle size	12 inch
Screen size	18 inch
Screen Length	48 inch
Unit Screen Area	18.8 ft <sup>2</sup>
Screen Slot Opening	~0.39 inch (~10 mm)
Installation Orientation	Vertical/Submerged
Connection	Flanged
Main Material	304 Stainless Steel

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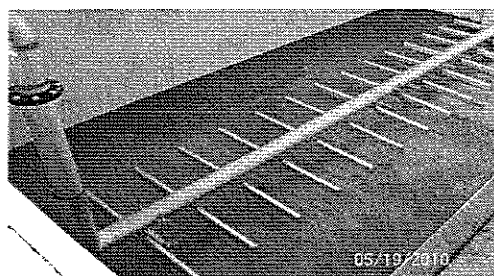
## bioprocessH2O

### BioFAS™ Aeration Grid Assembly

Oxygen is required to provide sufficient mixing and to ensure that the biological oxidation air requirements are satisfied. The coarse bubble aeration grid is constructed for robust operation, practically eliminating aeration grid maintenance. PVC and/or stainless steel components make the grids resistant to corrosion in municipal and industrial environments. The grids are designed to induce sufficient mixing within the reactor to promote high mass transfer rates and maintain a biofilm with an ideal thickness. The aeration grid assembly shall consist of the following components:

- **Drop leg** – the 304 SS drop pipe shall be provided with a flanged top and bottom connection and attaches to the 304 SS manifold assembly.
- **Manifold assembly** – the 304 SS manifold that feeds each lateral shall be furnished with flanged connections at all field joints.
- **Laterals** – the 304 SS laterals that feed each diffuser shall be furnished with flanged field connections, welded end caps and factory installed 3/4" tees with NPT fittings for connection to the diffusers.
- **Diffusers** – 24" MaxAir duplex coarse bubble air diffusers shall be furnished with bottom deflectors and 3/4" NPT threaded connections for field assembly to the 3/4" tees that are furnished on the laterals.
- **Supports** – for manifold and lateral shall be supplied (including anchor bolts).

### Aeration Grid Installed in a MBBR Bioreactor



### BioFAS™ Air Diffusers

One hundred forty (140) coarse bubble air diffusers shall be provided for the bioreactor to meet the aeration requirements. The diffusers shall have the following characteristics:

Model	24" MaxAir Coarse Bubble Diffuser
Airflow Range	0 – 55 SCFM
Design Air Flow Range	0 – 36 SCFM
Unit DWP Range	0.5 – 7.0 Inches H <sub>2</sub> O
Assembly Length	24.4" long

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### Mixing Requirements:

The volume of air required for optimal mixing is referred to as the Bioreactor Mixing Index and is determined by:

- Bioreactor Mixing Index = air applied / volume of bioreactor
- Where the Bioreactor Mixing Index is typically = 0.03 – 0.05 scfm / ft<sup>3</sup>

### Minimum Blower Air Requirements:

- The total airflow for the bioFAS™ MBBR system at 21 deg C: 2,015 SCFM
- The total airflow for the bioFAS™ MBBR system at 32 deg C: 3,926 SCFM
- Blower discharge pressure at 15' SWD is 7.8 psig (includes 1.5 psig for pipe losses)

### Process Air Blowers

Two (2) Positive Displacement Rotary Lobe Blowers shall provide air to the bioFAS™ MBBR aeration grid assembly. Each blower will be complete with a factory installed sound enclosure to limit the sound level to 78 dB(A) at one meter.

- |                            |                                   |
|----------------------------|-----------------------------------|
| ▪ Type                     | Rotary Lobe/Positive Displacement |
| ▪ Manufacture              | Kaeser or equal                   |
| ▪ Model                    | FB 790C                           |
| ▪ Capacity Rating          | 2,000 SCFM @ 7.8 PSIG             |
| ▪ Motor                    | 125 HP TEFC VFD Driven            |
| ▪ Power Requirements       | 480 VAC/3Ø/60 Hz                  |
| ▪ Material of Construction | Cast Iron Rotating                |



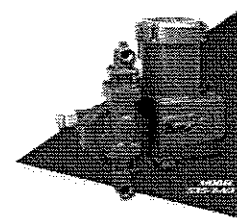
### Chemical Addition Module

A chemical feed module shall be provided for the MBBR nutrient supply and one the addition of a defoamer reagent. A total of three (3) chemical metering pump stations will be provided, two (2) for nutrients (Ammonia-N, Phosphorus), and one for the addition of defoamer. The 50% Urea chemical will be pumped directly from a 6,000-gallon bulk storage tank. Phosphoric acid and the defoamer will be pumped from 55-gallon drums or totes.

**Urea Bulk Chemical Tank Module** – Bulk storage tank is sized for 6,500 gallons for bulk liquid chemical deliveries from 5,000 gallon tanker trucks.

Note: Tank location is to be within 60' of tanker truck:

- One (1) 6,500-gallon HDPE tank (105" diameter x 193" high) heat traced, insulated and furnished with:
  - One (1) 2" diameter fill pipe furnished with 304SS Cam-lock fitting
  - One (1) 3" vent pipe, U-bend
- Two (2) Float-type Level Sensors
- One (1) Chemical Metering Pump rated for 80 GPH



**Chemical Metering Pump Modules** – sized and designed for Phosphoric Acid and Defoamer chemicals will be pumped from 55-gallon drums or totes and will have the following specifications:

- Manufacturer: Walchem or equal
- Pump design: diaphragm-type, solenoid-driven, microprocessor based metering pump
- Installation: panel mounted (chemical tote or drum by others)
- Liquid End: Acrylic/PVC

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### **Electrical Control Module**

One (1) Allen Bradley programmable logic controller (PLC) and control system shall be housed in a NEMA 12 enclosure to control the Bioprocess supplied equipment. All I/O will be wired to terminal blocks located in the enclosure. The control panel will be completely assembled, programmed and functionally tested prior to shipment. The control panel shall include:

- NEMA 12 enclosure with back panel, and forced ventilation kit.
- Thru Door Disconnect Switch sized for entire panel connected load.
- All starter/overload relays will be preceded with branch circuit breakers.
- A 10" color, Mono-Touch Operator Interface Screen (OIT). OIT will be programmed with multiple screen views to allow the operator to adjust operating parameters and monitor plant functions and alarms.
- Variable frequency drives (VFDs) will be installed for the two (20 MBBR blowers and the clarified water transfer pump.

### **Engineering Support**

- Control panel design and programming
- Installation verification
- Technical Service commissioning and operator training
- One (1) trip, two (2) technicians for 3 days on site

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### Items to be Supplied by Others

BioprocessH2O is supplying a process solution and equipment package. We have not included onsite installation. In addition, design and supply of infrastructure such as buildings, utilities, inter-connecting process piping etc. is not included in this proposal unless specifically called out. Listed below are items that are to be supplied by others. This list is not meant to imply it is included in our scope of supply if not listed below.

- Rectangular Concrete Tank sized for 70' l x 24' w x 18' h having a volumetric working capacity of 188,000 gallons at 15' SWD for the bioFAS™ MBBR bioreactor equipped with:
  - A 12" flanged nozzle connection mounted on the internal wall of the aeration tank for effluent transfer pump suction.
  - 12" diameter riser pipe, pipe supports etc. mounted on the 12" flanged nozzle connection for the SBR transfer pump suction as per bioprocessH2O specifications.
  - A retention screen or partition mounted on the overflow weir as per bioprocessH2O specifications.
- Field installation of all bioprocessH2O supplied equipment
- Submersible pump rail pipes - two (2) 2" diameter x ~20' high 304 SS pipes.
- An equipment building sized and designed to house the chemical dosing systems, chemical storage, electrical control panel and aeration blowers approximately, 30' l x 20' w x 12' high.
- Offloading and rigging of equipment (cranes, lifts, etc.)
- Anchor bolts, foundations, concrete, grout, or sealant
- Heat traced and insulated interconnecting piping (if applicable) with any required fittings and isolation valves, etc.
- Site supervision and coordination
- Safety related equipment (i.e. fire extinguishers, safety shower, breathing apparatus, eye wash stations, etc.)
- Chemicals including acid, caustic, nitrogen, phosphorous, defoamer, etc.
- Biological seed for startup
- Sludge storage, disposal, etc. as required
- All lab analysis per the sampling and analysis protocol to be defined by BioprocessH2O
- Responsibility for complying with all local, district, state or federal regulations and permits that may apply to the system installation or operation
- Site specific requirements such as fencing or yard improvements
- Any other items not listed in BioprocessH2O scope of supply above

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**SCOPE OF SUPPLY by BioprocessH2O**

Qty	Description
1	TRANSFER PUMP MODULE <ul style="list-style-type: none"> <li>One (1) Submersible Pump sized for 300 GPM</li> <li>One (1) Magnetic Flow Meter</li> </ul>
1	SINGLE-STAGE BIOFAS™ MBBR BIOREACTOR MODULE <ul style="list-style-type: none"> <li>Two Hundred and Fifteen (215) m<sup>3</sup> of BioFAS B-460 Biofilm Carriers</li> <li>One (1) 304SS Aeration Diffuser Grid</li> <li>One (1) 304SS Media Retention Screen</li> <li>Two (2) 125 HP PD Blowers equipped with a VFD drives</li> <li>One (1) Foam Sensor</li> <li>One (1) DO Analyzer and Sensor</li> </ul>
1	CHEMICAL ADDITION MODULE <ul style="list-style-type: none"> <li>One (1) 6,500-gallon Bulk Storage Tank Module for Urea</li> <li>Three (3) Chemical Addition Skids for bioFAS™ MBBR</li> <li>Three (3) metering pumps (defoamer, nitrogen and phosphorus)</li> </ul>
1	ELECTRICAL CONTROL MODULE <ul style="list-style-type: none"> <li>One (1) NEMA 12 enclosure</li> <li>One (1) PLC Controller</li> <li>Two (2) 125 HP VFD Drives</li> </ul>
<b>Additional Services</b>	
1	Shop Drawings (electronically delivered)
1	Engineering Design of system
Up to 5 Days	Days on-site commissioning assistance and training (1 trip)

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## **APPENDIX B**

### **INSTALLATION OF A DUPLAX LINED FILTER SYSTEM AND CHLORINE DIOXIDE GENERATOR**

Ox uses approximately 100,000 gallons of water a day from the Flowing Springs Run. The water enters the property through a spillway into the "Infilco" building. The Infilco building houses two large tanks with filter units. These filter tanks contain media to remove solids and any bio organic matter from the creek. The filtered water goes to the boiler softener units, and also to the fresh water polymer make up units at the paper machine.

The tanks are older and the system is outdated. Fecal coliform levels in the influent water are high. When fecal coliform gets in the closed system it flourishes, overloading the SBR.

Garratt Callahan proposes to replace the filter tanks, and install a new electronic monitoring system. Ox will also install a small chlorine dioxide generator to bring the water quality to potable quality. A water well located on the property is used for eyewash stations and hand washing. This well has been contaminated by a diesel spill an adjacent property. Although the proposed new system treats only the incoming water used in the paper making process, it could also protect Ox from contamination of the existing wells which in turn can infiltrate Ox's closed water system.